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EXAMINER

BELLO, AGUSTIN

ART UNIT PAPER NUMBER

2633

DATE MAILED: 10/24/2003

21

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. 09/899,410	Applicant(s) FARMER ET AL.	
Examiner Agustin Bello	Art Unit 2633	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 13 June 2003.
- 2a) This action is **FINAL**.
- 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1,2,5-25 and 27-52 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,2,5-25 and 27-52 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 19,20.
- 4) Interview Summary (PTO-413) Paper No(s) _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 24-52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant's terminology appears to be incorrect and causes confusion. In claim 24, the applicant claims "an OPTICAL tap routing device" (emphasis added). The device does not appear to be optical at all. It appears to be an electrical device since the input and outputs of it are electrical. Further, in lines 11-13 of claim 24, the applicant says "combining downstream RF modulated optical signals received from the data service hub with the downstream optical signal in an optical diplexer connected to an optical transmitter". It is unclear what is connected to the optical transmitter. Is it the diplexer that is connected to the optical transmitter or is it he downstream optical signals. Even when looking in the figure, it is unclear which elements the applicant is claiming is connected to each other.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 21, 24, 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farris (US Patent No. 5,541,917) in view of the articles "Heathrow- Experience and Evolution"

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by John Bourne et al. (hereinafter "Bourne") and "A Broadband Access Network Based on Optical Signal Processing: The Photonic Highway" by Yamaguchi et al. (hereinafter "Yamaguchi").

Farris disclosed an optical communicating method comprising the steps:

- propagating downstream optical signals at (for example, fiber 415) a single wavelength from the data service provider (for example, 403);
- receiving the single wavelength downstream optical signals in a laser transceiver node (HDT 180, Fig. 4) from the data service provider;
- dividing the downstream signals between preassigned multiplexers (for example, voice, packet or ATM multiplexers, col. 23, lines 12-54) in the laser transceiver node with an optical tap routing device (for example, col. 23, lines 55-68);
- apportioning bandwidth between subscribers in the laser transceiver node (col 26, line 23 to col. 30, line 30 and col. 15, lines 18-33);
- combining the downstream RF modulated signals (for example, signals from 170) with downstream optical signals (for example, signals from 415 or 335) in electrical domain in the transceiver node (HDT), and converting the combined signals from electrical to optical (col. 22, lines 52-65) for transmission to ONU; and
- propagating combined downstream optical signals at a single wavelength with an optical transmitter (E/O, col. 22, lines 55-57) to ONU(at least one optical tap) via at least one optical waveguide (190).

Farris differs from claims 1, 21, 24 and 41 in that Farris does not specifically disclose the downstream RF modulated signals and downstream signals are combined in optical domain

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(“combining downstream RF modulated *optical* signals with the downstream *optical* signals”).

However, as taught by Yamaguchi, combining optical signals in optical domain having the advantage of eliminating optical-to-electrical conversion resulting in faster operation and save cost (page 1031, col. 2, lines 1-45). Since Farris in Fig.1B clearly illustrates that the downstream RF modulated signals from 170 and downstream signals from 335 or 415 going into the HDT. 180 are optical signals, it would have been obvious to an artisan at the time of the invention to combine the optical signals from 170 with the downstream optical signals from 335 or 415 of Farris in optical domain without O/E or E/O conversion in order to provide faster operation as taught by Yamaguchi.

The modified method of system of Farris and Yamaguchi further differs from claims 1, 21, 24, and 41 of the present invention it does not mention extending the optical fiber all the way to subscriber home. However, as shown by Bourne, extending fiber connection all the way to the residential home is old and extremely well known in the art. Therefore, it would have been obvious to an artisan at the time of the invention to further extend the fiber connection from the ONU 210 of Farris to residential home 217 as taught by Bourne in order to take the advantage of fiber (for example, high bandwidth and immune to EMI).

5. Claims 2, 5, 7-12, 14-20, 22, 23, 25, 27, 29-37, 39, 40, and 43-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farris (US Patent No. 5,541,917) in view of the articles “Heathrow- Experience and Evolution” by John Bourne et al. (hereinafter “Bourne”), “A Broadband Access Network Based on Optical Signal Processing: The Photonic Highway” by Yamaguchi et al. (hereinafter “Yamaguchi”) and Lehman (U.S. Patent No. 4,763,317).

Regarding Claim 2, the combination of references differs from the claimed invention in

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that it fails to specifically teach that the laser transceiver node further comprises an optical tap routing device for apportioning the bandwidth between subscribers of the optical network system. However, Lehman, in the same field of endeavor, teaches it is well known in the art to use a laser transceiver node further comprises an optical tap routing device for apportioning the bandwidth between subscribers of the optical network system (reference numeral 502 in Figure 1). One skilled in the art would have been motivated to use a laser transceiver node further comprising an optical tap routing device for apportioning the bandwidth between subscribers of the optical network system in order to divide the bandwidth between a plurality of subscribers. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use a laser transceiver node that further comprises an optical tap routing device for apportioning the bandwidth between subscribers of the optical network system.

Regarding Claims 5 and 27, the combination of references and Lehman in particular teaches that the laser transceiver node accepts gigabit optical signals from the data service hub and partitions the optical signals into a predetermined number of groups (e.g. according to subscriber demand or the number of subscribers connected to the transceiver node). The combination of references differs from the claimed invention in that it fails to specifically teach that the node accepts Ethernet signals. However, Ethernet signals are common to systems like that of the combination of references and overall are well known in the art. Furthermore, Lehman teaches that the system is capable of handing packetized data formats, which clearly would have included Ethernet type signals. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have used Ethernet signal with the system of the combination of references.

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Regarding Claims 7, 8, 29, 30, 43, and 44, the combination of references differs from the claimed invention in that it fails to specifically teach that the laser transceiver is mountable on a strand in an overhead plant environment or housed within a pedestal in an underground plant environment. However, one skilled in the art would clearly have recognized that it would have been possible to place the transceiver node in either environment without departing from the scope of the invention of the combination of references. Placing a transceiver in such environments is well known in the art and would have been obvious to one skilled in the art at the time the invention was made.

Regarding Claim 9, the combination of reference and Lehman in particular teaches that the distance between the laser transceiver node and the data service hub comprises a range between zero and eighty kilometers (column 9 lines 62-65).

Regarding Claims 10 and 36, the combination of references and Lehman in particular teaches that the transceiver node comprises at least one optical transmitter but differs from the claimed invention in that it fails to specifically teach that the laser transceiver node comprises at least one of a Fabry-Perot laser, a distributed feedback laser, and a vertical cavity surface emitting laser (VCSEL). However, Fabry-Perot laser, a distributed feedback laser, and a vertical cavity surface emitting laser (VCSEL) are all well known types of lasers that are readily available to one skilled in the art. Furthermore, one skilled in the art would clearly have recognized that it would have been possible to incorporate any of the types of laser claimed by the applicant. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have chosen the laser in the transceiver node to be one of a Fabry-Perot laser, a distributed feedback laser, and a vertical cavity surface emitting laser (VCSEL).

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Regarding Claims 11 and 37, the combination of references and Lehman in particular teaches that the laser transceiver node further comprises an optical tap routing device that allocates additional or reduced optical bandwidth to at least one subscriber optical interface relative to other subscriber optical interfaces in the optical network system (column 3 lines 37-45, column 4 lines 32-48, column 7 lines 34-36, 48-51, column 13 lines 3-11).

Regarding Claim 12, the combination of references and Lehman in particular teaches that the laser transceiver node comprises an optical tap routing device (reference numeral 502 in Figure 9) that manages upstream and downstream optical signal protocols (column 18 lines 18-51).

Regarding Claims 14, 39 and 51, the combination of references and Lehman in particular teaches the optical network system of claim 1, wherein data bit rates for the upstream and downstream optical signals are substantially symmetrical (as seen in Figure 4).

Regarding Claims 15, 40, and 52, the combination of references and Lehman in particular teaches that the optical waveguides are capable of handling rates up to 450 Mbps (inherent in the transmission of up to Gbps signals from the data service hub to the transceiver node via optical fibers, column 14 lines 55-56).

Regarding Claims 16 and 22, the combination of references teaches an optical tap but differs from the claimed invention in that the combination of references fails to specifically teach that the tap comprises at least one optical splitter. However, the combination of references teaches at least one optical splitter that functions to split upstream signals (reference numeral 431 in Figure 4). One skilled in the art would clearly have recognized that it would have been possible to incorporate the splitter in the optical tap as opposed to the transceiver node, thereby

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allowing the upstream signals to be spilt from downstream signals prior to being transmitted to the transceiver node. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have used a splitter in the tap in order to split the upstream signals from the downstream signals prior to being transmitted to the transceiver node.

Regarding Claims 17, 23, 34 and 49, the combination of references fails to specifically teach that the optical service taps are connected one another. However, one skilled in the art would clearly have recognized that it would have been beneficial to connect optical taps in order to allow communication between subscribers that receive signals via different taps. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have connected the taps that service different subscriber groups in order to allow communication between subscribers on different taps.

Regarding Claims 18, the combination of references and Lehman in particular teaches that each optical tap propagates upstream and downstream optical signals in addition to downstream RF modulated optical signals (e.g. cable channels, column 2 lines 5-39, column 12 lines 16-34).

Regarding Claim 19, the combination of references and Lehman in particular teaches that each subscriber optical interface comprises an analog optical receiver (reference numeral 452 in Figure 8, column 17 lines 23-31), a digital optical receiver (reference numeral 410 in Figure 8), and a digital optical transmitter (reference numeral 412 in Figure 8).

Regarding Claim 20, the combination of references and Lehman in particular teaches multiple sets of waveguides that carry upstream and downstream information between the transceiver and data service hub (reference numeral 106, 107 in Figure 2).

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Regarding Claims 25 and 50, the combination of references fails to specifically teach that the subscribers are assigned to the respective individual multiplexers. However, Lehman teaches that a plurality of subscribers are assigned to a multiplexer. One skilled in the art would clearly have recognized that in an expanded network of Lehman, a plurality of subscribers would have been assigned to a plurality of multiplexers, each subscriber assigned to a respective multiplexer. Furthermore, duplication of the essential working parts of an invention does not constitute patentable material *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. It would have been obvious to one skilled in the art at the time the invention was made that if the network of Lehman were expanded to include a plurality of transceiver nodes and a plurality of subscriber sites, then each of the subscribers would have been assigned to respective multiplexers.

Regarding Claims 31 and 45, the combination of references and Lehman in particular teaches the method of claim 24, further comprising the step of providing one of video, telephone, and internet services via the optical signals (column 2 lines 5-39).

Regarding Claims 32 and 46, the combination of references and Lehman in particular teaches the method of claim 24, further comprising the steps of: splitting combined downstream optical signals with at least one optical tap (e.g. as seen in split of fiber 105 in Figure 2); and propagating the split downstream optical signals to at least one subscriber along at least one optical waveguide (as seen by fiber going to subscriber after split in Figure 2).

Regarding Claims 33, 35, and 47, the combination of references and Lehman in particular teaches connecting between one and sixteen subscribers to a respective optical tap (column 9 lines 20-28).

Regarding Claim 48, the combination of references and Lehman in particular teaches that

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the transceiver node is positioned near the customer premises (column 10 lines 1-3).

6. Claims 6, 28, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farris (US Patent No. 5,541,917) in view of the articles "Heathrow- Experience and Evolution" by John Bourne et al. (hereinafter "Bourne"), "A Broadband Access Network Based on Optical Signal Processing: The Photonic Highway" by Yamaguchi et al. (hereinafter "Yamaguchi"), Lehman (U.S. Patent No. 4,763,317), and Faulkner (U.S. Patent No. 4,975,899).

Regarding Claims 6, 28, and 42, the combination of references differs from the claimed invention in that it fails to specifically teach that the laser transceiver node comprises passive cooling devices in order to operate in a temperature range between -40 degrees Celsius to 60 degrees Celsius. However, the use of such passive cooling devices to maintain the operation of optical components within a certain temperature range are extremely well known in the art and would have been obvious to one skilled in the art. For example Faulkner teaches that heat sinks are used to keep transmitter system cool (column 1 lines 8-16). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use passive cooling devices such as the heat sink taught by Faulkner in order to keep the transmitter system of combination of references within the temperature range claimed by the applicant.

7. Claims 13 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farris (US Patent No. 5,541,917) in view of the articles "Heathrow- Experience and Evolution" by John Bourne et al. (hereinafter "Bourne"), "A Broadband Access Network Based on Optical Signal Processing: The Photonic Highway" by Yamaguchi et al. (hereinafter "Yamaguchi"), Lehman (U.S. Patent No. 4,763,317), and Williams (U.S. Patent No. 5,880,864).

Regarding Claims 13 and 38, the combination of references teaches the limitations of

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claim 11, but differs from the claimed invention in that it fails to specifically teach that the protocol for transmission of signals is time division multiple access. However, one skilled in the art would clearly have recognized that it would have been possible to use any of the well known protocols for data transmission including TDMA. Williams, in the same field of endeavor, teaches that it is well known in the art to use a time division protocol to transmit data (column 13 lines 46-65). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have used TDMA protocol to transmit information in the system of combination of references as taught by Williams.

8. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burton (U.S. Patent No. 5,572,347).

Burton teaches providing downstream optical signals at a single wavelength (ON 14) from a data service provider (10), receiving the single wavelength downstream optical signal in a transceiver node (1102), dividing the downstream signal (column 10, lines 54-60), apportioning bandwidth (column 11, lines 4-16), multiplexing the downstream signals, multiplexing and combining a downstream RF modulated signal (182, figure 17) which is connected to an optical transmitter (190) and propagating the combined downstream optical signals at a signal wavelength to at least one subscriber via at least one optical signal is set to at least one subscriber. Although Burton does not specifically teach an optical diplexer, it is well known to propagate signals optically in order to avoid noise and delay caused by converting signals from optical to electrical and then from electrical back into optical signals. See also the above 112 problems. It is unclear that the applicant is actually using optical signals with an optical diplexer. Although Burton does not specifically teach that he uses a tap to signals to a subscriber, it is well

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known to use a tap to provide signals to at least one subscriber. It would have been obvious to use a tap to provide a signal to a subscriber in the system of Burton since using a tap is an inexpensive way to provide a signal to a subscriber when no additional processing of a signal is needed at the point where the signal is split off to go to the subscriber.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (703)308-1393. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703)305-4729. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

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